IVAM Product Market “High-tech for Medical Devices” at COMPAMED 2013

November 20 to 22, 2013, hall 8a

The COMPAMED is an international leading marketplace for the suppliers market of medical manufacturing and takes place in Dusseldorf, Germany from November 20 -22, 2013, co-located to MEDICA World Forum for Medicine. The **IVAM Microtechnology Network** will present the Product Market “High-tech for Medical Devices” and the “COMPAMED HIGH-TECH FORUM“ in hall 8a.

At the joint pavilion of the IVAM Microtechnology Network “High-tech for Medical Devices” more than 40 international exhibitors from ten nations will showcase their products and technologies on an area of 600m². The main topics at the IVAM area are innovative micro-optics and laser products, intelligent microfluidic systems for e.g. diagnostic applications, micro sensors, complex micro structures and components, Micro-Electro-Mechanical Systems (MEMS) as well as surface and advanced materials technology for medical technologies and life sciences. Moreover, the exhibitors from the fields of micro and nanotechnology offer R&D and manufacturing services for medical devices.

IVAM will also present the related forum, the “COMPAMED HIGH-TECH FORUM“. With about 40 presentations during three days, the forum gives comprehensive insights into the medical suppliers market. The focus of the forum 2013 is on “Laser and Photonic Applications”, “Microprecision, Manufacturing and Processing”, and “Printed Intelligence”. Additionally, IVAM is planning a Singapore session and sessions in cooperation with partners like Microfluidic ChipShop and the Fraunhofer Institute for Reliability and Microintegration IZM.

Microsensors for improved patient care

ACEOS GmbH presents its established and reliable sensor technology for measurements of O_2 and CO_2 concentrations and volume flow rates in human breathing. The technology is used by prestigious global manufacturers and in ACEOS’ own end device brand named “aerolution”. Herein ACE-DXV is a combined module with integrated pump, temperature, humidity and pressure sensors which allows for a one point calibration with ambient air. “The further development of ACEOS technology will lead to so called “cold sensors” for measurements up to 100% O_2. New medical applications, e.g. ventilation, will be addressed soon” says Martin Kusch, director of international sensor modules sales.

Together with the filter specialist **Karl Küfner KG**, the **HSG-IMIT** presents the intelligent insufflation system “rescue iFil” for provision of medical first aid to accident victims. The key element of “rescue iFil” is a tube for integrated measurement of respiratory air flows. The specially designed tube with flow screens guides the breath of the injured and of the rescuer over a MEMS based flow sensor. The sensor chip developed by HSG-IMIT allows analyzing, saving and evaluating the alternating respiratory flows. “rescue iFil” simplifies insufflation for the rescuer and improves the results of medical first aid. This new way of emergency aid is the first solution worldwide which takes care of this problem of all rescuers and revolutionizes the emergency management at the scene of the accident.

European Sensor Systems S.A. (ESS), an affiliated company of THEON Sensors S.A, is a global developer and manufacturer of high quality sensors based on micro-electronics technologies. At COMPAMED European Sensor Systems S.A. (ESS) announces the launch of ESCP2-M5, a MEMS based capacitive barometric pressure sensor with world class resolution, based in ESS’ innovative surface micro machining SOI technology. The small footprint of the ESCP2-M5 in combination with programmable power modes, which enable low consumption, makes it ideal for use in portable devices, medical equipments, altimeters, weather stations, navigation systems and every other electrical equipment that demands high accuracy measurement of the barometric pressure. ESCP2-M5 measures an altitude resolution of 10 cm with SPI and I2C interface. The digital output is fully calibrated and temperature compensated, thus the sensor is ready to be installed directly to the end user's system.

NUMERIK JENA is manufacturer of high precision sensors for length and angle. The systems can be adapted to different applications due to the universal measuring principle and a wide variety of options.

The Swiss sensor manufacturer **Sensirion AG** will showcase its leading expertise in the field of flow measurement at COMPAMED. The new SFM3000 flow meter for anesthesia and respiration applications features very low pressure drop, highest accuracy and fast response time. In the differential pressure sensor area, most impressive are the new versions of the digital SDP600 and analogue SDP1000 series with low power consumption, extended measurement ranges or failsafe certification. The sensor company continues to demonstrate its high-technology capabilities in the field of liquid flow sensors and will be presenting the new SLQ-QT500 liquid flow meter for measuring liquid flow in the range of 0-120ml/min. In addition to these standard products, Sensirion also offers OEM solutions for applications in the medical market.

In the European project **SIMS** the **Fraunhofer Institute for Electronic Nano Systems ENAS** integrates a printed battery in a printed sensor system. The project partners combine different printed components like a battery, display and biosensor into this smart system for analyzing cholesterol.

Glass, plastic or metal: complex microstructures and -components

IMT Masken und Teilungen AG develops and produces customized microstructures on and in glass for a variety of optical and electrical applications. Core competences are the deposition and structuring of metallic and dielectric layers as well as the fabrication of high-precision microstructures in glass.

CDA GmbH: The companies' core competence is the mass-production of highly complex microstructures in plastics. Inspired by the needs of customers CDA constantly expands the limits of what is possible to make the ideas of customers become reality. With know-how in micro optic, microfluidics and printed electronics CDA combines various applications into unique and innovative smart solutions for the future.

MICROMETAL GmbH specializes in etching of highly accurate metal micro components. As a leading user of etching, the company is known to etch micro components in very large quantities and in a worldwide unique precision. In 2013, MICROMETAL presents two new processes on the growing markets of medical and microsystems technology. 1. StepLine-Ultra: etching technology for most metals and alloys. MICROMETAL utilizes all degrees of freedom to etch customized components. The result: high-precision components in an infinite variety of materials. StepLine-3D: The three-dimensional etching technology for shapes and surfaces. The result: 3D-hightech solutions in single-part and series production.

Taisei Kogyo Co., Ltd. from Japan produces metal parts through metal injection molding (M.I.M.), using an original binder system, which makes the production cost more competitive than other manufacturing processes.

From the centers of excellence in Dortmund, Hilversum and Shenzhen, utilizing in-house and complementary technologies, **Etchform BV** offers customized solutions for etched and electroformed metal precision parts with best possible total cost of ownership to high-tech industries. Typical applications regarding different industries are aerospace (e.g. air inlet grids), automotive (e.g.filters), energy supply (e.g. fuel cell plates), engineering (e.g. shims and spacers), medical technology (e.g. grid test phantoms) and microelectronics (e.g. EMI/RFI housings).

Minitubes S.A. from France offers custom made precision metal tubing and tubular components. More than 100 alloys are available, including stainless steels for surgical implants, nickel titanium, tantalum and precious alloys with diameters from 0.10 to 30 mm. Thin walls, minute tolerances and smooth finishes are specialties of Minitubes. Products are used in stents, endoscopic devices, diagnostic probes, surgical instruments, catheters, electrodes and many more. Furthermore, the company offers in-house tube drawing, forming and assembling.

PTF Pfüller GmbH & Co. KG is an international leading company which produces highly complex mechanical high-tech precision parts and assemblies. The headquarter is located in Stollberg and further locations worldwide where about 190 employees are busy in manufacturing precision parts with highly complex geometries and finest contours. As a system provider for highest mechanical claims PTF offers all mechanical processes, starting with design, CNC milling, CNC turning, CNC grinding, wire eroding, surfaces, clean room assembly through to the delivery of the reviewed assemblies. The QM-system is certified to DIN EN ISO 9001, 14001, 13485 and 9100 to fulfill the high

product quality requirements of customers in the semiconductor industry, food industry, medical technology, laser industry and aerospace industry.

Cutting, drawing and cambering of complex metal parts for medical, aeronautics, electrical engineering, automotive and further industries: **SERODE SA** from France designs one step and progressive dies in a collaborative way, then realizes and supports them. Concerning the medical industry, Serode is particularly skilled in forming titanium components like pacemakers, defibrillators, access ports and many more.

RKT Rodinger Kunststoff-Technik designs and manufactures plastic products with core competences in precision mold making and plastics injection molding technology.

Highly precise drive and positioning systems

Micromotion GmbH produces micromechanical parts as well as the world's smallest backlash-free precision gears and actuators for rotary and linear positioning challenges. Compact design and high power density make these products ideally suited to demanding applications in medical equipment. The micromechanical parts built up with LIGA technology are applied for miniaturized adaptation mechanisms in systems like endoscopes. An integration of these parts to fully encapsulated micro gears enables the usage in applications with extreme environmental conditions (UHV and sterilizable applications). Positioning challenges with resolutions of few nm for microscopy can be realized by combining these micro gears to high-precision multi-axis positioning tools with smallest dimensions.

Steinmeyer FMD, **Feinmess Dresden GmbH** is dedicated to the design and engineering of precision linear and rotary stages. For unique environmental requirements of the semiconductor equipment industry, Steinmeyer FMD has designed and shipped many multi-axis systems. The expertise lies not only in appreciating the details of every application but also in knowing how to achieve the highest possible precision.

Surface and materials technology for medical technologies and life sciences

The area of biomaterials at **Fraunhofer Institute for Manufacturing Technology and Applied Materials Research IFAM** performs process and materials development of biomaterials focusing on manufacturing of components for medical applications. Core competences are process developments in powder and micro injection molding for metallic materials and resorbable composites. Furthermore, bio mimetic approaches for the modification of biopolymers are pursued. The focus of developments at Fraunhofer IFAM is on biodegradable metals and alloys as well as composites made of polymers and bio ceramics for the manufacture of bone replacement and trauma implants. Composites consisting of two or more different components provide a special opportunity to vary properties within a broad range and to adapt them to the specific application. Concerning manufacturing, injection molding and powder injection molding based on ceramic and metal powders are particularly suited to adjust the material properties and to produce complex components in net-shape processes. Also biodegradable metal-based materials represent an interesting approach when it comes to load bearing implants.

Specialty Coating Systems (SCS) will feature its new microRESIST antimicrobial Parylene technology, along with its Parylene conformal coating services at COMPAMED 2013. microRESIST combines the protective benefits of ultrathin Parylene with antimicrobial properties to effectively eliminate harmful microorganisms on coated medical devices. SCS Parylene coatings are biocompatible, bio stable and offer excellent moisture, chemical and dielectric barrier properties to many medical devices, including stents, catheters, pacemakers, needles and mandrels, and to pharmaceutical containers and applications as well. According to SCS Medical Market Manager Juan Gudino, "SCS is excited to host a presentation at the IVAM Forum to share the capabilities of mircoRESIST with the visitors of COMPAMED".

Photonic for medical applications: innovative optical and laser products

Berliner Glas is one of the leading European OEM manufacturers of innovative optical assemblies and systems. As an ISO 13485 certified company, Berliner Glas offers the complete spectrum of

optical solutions from design to volume production in clean rooms from a single source. Berliner Glas supplies innovative companies that stand out from the competition by the quality and functionality of their products.

FISBA OPTIK AG is a worldwide leading supplier of customized optical systems, assemblies and components. Customers benefit from many years of experience of FISBA and from innovative process and manufacturing technologies. This year, FISBA will be presenting the ultra-small laser module FISBA RGBeam at COMPAMED. With dimensions of approx. 20.5 x 12.2 x 5 mm it takes up a minimum of space. The lighting module can be customized as a light source in life sciences, automotive, production and industrial metrology applications. Thanks to its light weight the FISBA RGBeam is extremely suitable for portable applications. The FISBA exhibition portfolio will be complemented with fast axis collimator lenses (FAC), precision molded lenses (PML) and micro-optic arrays.

The **Fraunhofer Institute for Laser Technology ILT** conducts research and development for industrial customers in the fields of laser development, laser application, measurement and microsystems technology. It offers services like the development of laser beam sources and components as well as laser manufacturing (cutting, ablation, drilling, welding and soldering, surface refinement, micro manufacturing and rapid prototyping).

JENOPTIK Polymer Systems GmbH is a prime partner in industrializing and manufacturing of customized optoelectronic single or system components for diagnostics & therapy, endomedicine and biotechnology. This includes demanding chip technology as well as precision assembly and housing according to customer requirements.

Micreon GmbH is a prestigious contract manufacturer and technology consultant for micromachining with femtosecond lasers. Micreon develops, manufactures and finishes components for medical technology, electronics, the pharmaceutical industry, toolmakers and automobile manufacturers.

Modulight, Inc is an ISO13485 certified OEM laser solutions provider. Modulight's strongest growing product segment is OEM manufacturing of various types of therapy laser systems from cancer treatments to bacteria removal and beyond. Modulight has an existing CE approved product platform for single or multiple output channel therapy light sources. This combined with flexible wavelength selection possibility allows cost-efficient product launches.

Intelligent microfluidic systems for diagnostic and other applications

The Fraunhofer Institute for Electronic Nano Systems ENAS shows smart systems for analyzing and monitoring substances as well as diagnosing diseases at the COMPAMED 2013. Fraunhofer ENAS develops microfluidic systems in various projects with scientific and industrial partners. These systems support the diagnosis of diseases like cancer, influenza or Chagas, a tropical disease. Furthermore, Fraunhofer ENAS presents two different micro spectrometers which analyze gases, fluids and solids. These portable spectrometers work in the NIR and MIR range.

Engineering services for medical technology: **Bartels Mikrotechnik** is the leading provider of engineering solutions in active microfluidics, especially for portable and miniaturized systems. As specialist in the handling of small volumes of liquids or gases Bartels Mikrotechnik is involved in different customer projects concerning the development of future portable medical devices. Realized examples of lab-on-a-chip systems, cartridges for diagnostic platforms, delivery devices, other therapeutic devices and customized microfluidic components as micro valves and micro pumps for medical instrumentation will be presented at the COMPAMED.

2E mechatronic is a medium-sized company that is active in the automotive branch, industrial electrical systems, medical technology and automation and is one of the leading providers in the field of MID technology. The product range includes DIN connectors, precision moulding housing for ESP, housing for side airbag sensors, capacitive inclination sensors, flow sensors as well as LED- and OLED-diodes in MID technology. At COMPAMED a new multichannel pump for small volumes (10µl - 4ml) will be showcased: the new micropump of DNE microtechnology and 2E mechatronic was developed to pump various fluids and combines the benefits of different types. The fluidic part is

constructed as a disposable and can be changed easily. The modular construction of the pump allows a parallel usage from 2 to 10 tubes. Separated from pressure variations in the other channels a flow volume can be defined for each channel. Further benefits are: peristaltic flow principle with integrated flow-stop, bidirectional flow possible, optimized cost-benefit ratio, different tube diameters and motors available.

EDC GmbH manufactures customized polymer products with functional surfaces and offers the entire value chain for serial products. For the production of highly complex microfluidic devices EDC uses high-precision injection compression molding and galvanic processes under clean room conditions and PVD metallization processes and different bonding technologies. LOC devices are used in many applications in the field of medical, chemical and biological analysis as well as chemical or biological reactors. Instead of using planar structures these complex systems can be realized as a two-sided device or as a multilayer bond. Optional sensors, optical and micro mechanical devices can be mounted automatically.

HSG-IMAT is one of the leading providers of research- and development services in the field of housing and mounting of micro systems. The services cover the whole product cycle, starting from conception of new systems up to mass production of small and first series. For this, the institute owns highly modern systems, processing and measurement technology. At COMPAMED 2013 HAG-IMAT will present a patented pump and dispensing technology, which provides contamination free dispensing, a cheap disposable pump element and low energy consumption. Application fields can be found in medical environments (infusion pumps, disinfectant dispensers) or in the food and pharmaceutical industries.

Printed circuits for medical devices

The leading Swiss PCB manufacturer **Optiprint AG** is looking forward to presenting their high-end printed circuit board capability at COMPAMED 2013: featuring best-in-class thin “flex” multilayers that are used in applications such as hearing aids, pace makers, prostheses and neuromodulation. At the fair, the company will show micro structures with line-and-space of 25 µm and HDI-PCBs with blind-and-buried vias or stacked-via technique (overlapping Copper filled vias). In addition to conventional surface treatments like “chemical Tin”, Optiprint offers universal (and wire-bondable) high-end surface finishes like ENIG, ENEPIG and ASIG (Silver-Gold).

Research, development and manufacturing services

The **CiS Forschungsinstitut für Mikrosensorik und Photovoltaik GmbH** offers application-oriented contract research and development as well as optical, optoelectronic, impedimetric and piezoresistive sensors and microsystems. Full R&D service from sensor design to prototyping and test is another core competence of the CiS.

The **Fraunhofer Institute for Reliability and Microintegration IZM** focuses on microsystem integration, heterosystems, micro mechatronics, reliability, wafer level packaging and micro assembly technologies. The Fraunhofer IZM offers R&D services, process transfers, reliability evaluations, failure analysis, prototype development as well as systems integration concepts.

Prontor GmbH has a long history as a trusted partner of major manufacturers of medical equipment. Services range from development or re-design of mechanical, optomechanical and mechatronic systems, through manufacturing and surface treatment of mechanical components, to assembly and final testing of components and devices. Phase-oriented project management guarantees a structured time and cost framework as well as transparency, traceability, and appropriate documentation. Prontor GmbH is certified according to ISO 9001, ISO 13485, ISO 14001 and OHSAS 18001.

Efficient production technologies

IMS (Integrated Mechanization Solutions) develops, builds and delivers custom-made, turn-key solutions for micro assembly. From micro loudspeakers for hearing aids and mobile phones to pressure sensors for automobiles, all can be produced in high volumes on the assembly platforms. As tried and tested specialist in concept development for the high-tech, electrical, and medical industries,

IMS guarantees quality, innovative thinking, flexibility, and short lead times. With IMS, the entire process − from development to after sales services − is in good hands.

Micro Systems UK will be running a Wittmann MicroPower micro injection molding machine cell at COMPAMED, producing a demonstrator lab-on-a-chip two-component base part. The Wittmann MicroPower micro injection-molding machine has a clean room environment, in-line camera quality control system with robot orientation for packing. To improve productivity the lab-on-a-chip base micro-mould features two moving ejector half's to allow de-mould and molding simultaneously. The micro-mould was manufactured by Micro Systems UK and parts are produced by Micro Systems Vienna manufacturing division.

Efficient networks for initial business contact

Founded in 1998, **Yole Développement** provides marketing, technology & strategy consulting and media in addition to corporate finance services. With a strong focus on emerging applications using silicon and/or micro manufacturing, Yole group has expanded to include more than 50 associates worldwide, covering among others, MEMS, microfluidics and medical. The group supports industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to develop their business.

At COMPAMED 2013, the **IVAM Microtechnology Network** will demonstrate the advantages it offers to high-tech suppliers. With IVAM, companies and institutes from all over the world open up innovative markets and set new standards. IVAM accelerates the transfer of innovative ideas into profitable products. Apart from technology marketing, IVAMs activities include lobbying, market research, public relations, mission oriented research and accessing international markets.

Further information:

Further information and an exhibitor overview including contact data can be found at
http://ivam.de/compamed13

Images for editorial use (including reference) can be downloaded at

http://web.ivam.de/dl/IVAM_Press_Images_COMPAMED_2013

Press contact:

IVAM Microtechnology Network
Mona Okroy-Hellweg
E-mail: mo@ivam.de
Phone: +49 231 9742 7089

Captions and sources of pictures:

2E_mechatronic.jpg
Source: 2E mechatronic GmbH & Co. KG

ACEOS.jpg
ACEOS ACE-DXV
Source:ACEOS GmbH

CiS_1.jpg
Source: CiS Forschungsinstitut für Mikrosensorik und Photovoltaik GmbH

ESS_EuropeanSensorSystems.jpg
ESCP2-M5. MEMS based capacitive barometric pressure sensor with world class resolution
Source: European Sensor Systems

FISBA_1.jpg
Lasermodule FISBA RGBeam
Source: FISBA OPTIK AG

FISBA_2.jpg
Lasermodule FISBA RGBeam
Source: FISBA OPTIK AG

ENAS.jpg
Source: Fraunhofer Institute for Electronic Nano Systems ENAS

HSG_IMAT_1.jpg
Demonstrator of a sensor controlled infusion pump
Source: HSG IMAT

HSG_IMAT_2.png
Contamination free dispenser
Source: HSG IMAT

IFAM_1.jpg
Source: Fraunhofer Institute for Manufacturing Technology and Applied Materials Research IFAM

IFAM_2.jpg
Source: Fraunhofer Institute for Manufacturing Technology and Applied Materials Research IFAM

ILT_1.jpg
Source: Fraunhofer Institute for Laser Technology ILT

ILT_2.jpg
Source: Fraunhofer Institute for Laser Technology ILT

ILT_3.jpg
Source: Fraunhofer Institute for Laser Technology ILT

IVAM_1.jpg
IVAM Product Market „High-tech for Medical Devices“
Source: IVAM

IVAM_2.jpg
IVAM Product Market „High-tech for Medical Devices“
Source: IVAM

IVAM_3.jpg
The IVAM Microtechnology Network will also present the related forum, the “COMPAMED HIGH-TECH FORUM“
Source: IVAM

Micro_Systems_1. jpg
Source: Micro Systems UK Ltd.

micrometal_1.jpg
Precision etching of metal surfaces
Source: micrometal GmbH

Micromotion_1.jpg
Source: Micromotion GmbH

Micromotion_2.jpg
Source: Micromotion GmbH

Modulight_1.jpg

Source : Modulight, Inc.

Modulight_2.png
Source : Modulight, Inc.

OPTIPRINT.jpg
Source : OPTIPRINT AG

PTF_1.jpg
complex medical precision parts
Source: PTF Pfüller GmbH & Co.KG

PTF_2.jpg
complex medical precision parts
Source: PTF Pfüller GmbH & Co.KG

Sensirion_1.jpg
Sensirion's digital SFM3000 mass flow meter with very low pressure drop
Source: Sensirion AG

Sensirion_2.jpg
Sensirion's SLQ-QT500 liquid flow sensor for measuring liquid flow in the range of 0-120ml/min
Source: Sensirion AG

Specialty_Coating_Systems.jpg
The company's new microResist™ technology combines the protective benefits of ultrathin Parylene with antimicrobial properties to effectively kill harmful microorganisms on coated medical devices and components.
Source: Specialty Coating Systems